

REMARKS

The Examiner objected to claims 29-31 and 33-36 stating: “Regarding claims 29-31 and 33-35, the term "conformal" is unclear whether it applies to the dielectric material itself being a conforming type or that it applies to a specific conformal deposition method resulting in a specific structure, etc. For the purpose of this Office Action, it is interpreted as applying to either. Regarding claim 36, "polarity" in line 2 should be --plurality-- "said one or more dielectric layers" in line 4 should be --said dielectric layer--. Appropriate correction is required.”

As to claims 29-31 and 33-36, Applicants have canceled claims 29 and 30 and amended claims 30, 31, 34 and 35 to remove the word “conformal.”

As to claim 36, Applicants have amended claim 36 as the Examiner has suggested.

The Examiner rejected claim 8 under 35 USC 112 (2nd paragraph), as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

The Examiner rejected claims 1, 3-8, and 10-17 and 29-36 under 35 U.S.C. 102(b) as being anticipated by Bohr (U.S. Pub 2002/0064929).

The Examiner rejected claims 2, 9 and 17 under 35 U.S.C. 103(a) as being unpatentable over Bohr (U.S. Pub 2002/0064929) in further view of Yu (U.S. Pub. 2004/0121577).

Applicants respectfully traverse the §112 (2nd paragraph), §102(b) and §103(a) rejections with the following arguments.

35 USC § 112 Rejections

The Examiner rejected claim 8 under 35 U.S.C §112, (second) paragraph stating “Regarding claim 8, "bottom surfaces of said wire bond" in section (d) line 2 does not make sense and/or seems to be incomplete. For the purpose of this Office Action, the claim will be treated with this phrase deleted. The claim is also improperly amended, where the phrase above was added to the claim, but was not appropriately indicated per 37 CFR 1.121 (c) (2). This Rule is being waived in this case; however, appropriate correction is required in the next reply.”

In response, Applicants have amended claim 8 to remove “bottom surfaces of said wire bond.”

35 USC § 102 Rejections

The Examiner rejected claims 1, 8 under 35 U.S.C §102(b) stating “ Bohr [Figs. 2a-2i] discloses a method comprising: (a)providing a substrate [200]; (b) forming a passivation layer on a top surface of said substrate [Para. 22, lines 4-16]; (c) forming an electrically conductive layer [202] on a top surface of said substrate; passivation layer; (d) patterning said conductive layer into a plurality of wire bond pads [composite layers 204,206] spaced apart; top surfaces of said wire bond pads coplanar; said top surface of said substrate exposed between said wire bond pads [Fig. 2b]; (e) forming a dielectric layer [212] directly on said top surface of said substrate; said passivation layer; in spaces between adjacent wire bond pads and directly on top surfaces of said wire bond pads; said dielectric layer filling said spaces; and (f) completely removing said dielectric layer from said top surfaces of said wire bond pads, top surfaces of said dielectric layer in said spaces coplanar with coplanar top surfaces of said wire bond pads [Fig. 2d].”

As to claim 1, Applicants contend that claim 1, as amended, is not anticipated by Bohr because Bohr does not teach every feature of claim 1. For example; Bohr does not teach “after said patterning, forming a dielectric layer directly on said top surface of said substrate in spaces between adjacent wire bond pads and directly on said top surfaces of said wire bond pads.”

Applicants point out that Applicants claim 1 includes the limitation “top surfaces of said wire bond pads being top surfaces of said conductive layer and being parallel to said top surface of said substrate.” Applicants point out, that layer 212 of Bohr FIG. 2c is not formed directly on the top surface the conductive portion 206 but on the hard mask portion 204 of the composite bond pad 204/206. Applicants note that Bohr in paragraph [0024] specifically teaches that

“hardmask layer 204 is a moisture resistant **dielectric** material so that a hermetic seal can be

formed on conductive layer 202....Hard mask layer can be for example, silicon nitride or silicon oxynitride...”

Based on the preceding arguments, Applicants respectfully maintain that claim 1 is not unpatentable over Bohr and is in condition for allowance. Since claims 1-7, and 30-31 depend from claim 1, Applicants respectfully maintain that claims 1-7, and 30-31 are likewise in condition for allowance.

As to claim 8, Applicants contend that claim 8 is not anticipated by Bohr because Bohr does not teach every feature of claim 8. For example; Bohr does not teach “after said patterning, a top surface of said conductive layer and top surfaces of said bond pads being a same surface, said top surfaces of said bond pads being parallel to a top surface of said substrate.”

Applicants point out, the Examiner has defined the bond pads of Bohr as being “composite layers 204, 206” with layer 204 directly on top of layer 206 (which was formed from layer 202). Since each layer of two stacked layers must have a separate and distinct top surface, it is not possible the top surface of layer 204 and the top surface of layer 206 to be “the same surface” as Applicants claim 8 requires.

Based on the preceding arguments, Applicants respectfully maintain that claim 8 is not unpatentable over Bohr and is in condition for allowance. Since claims 9-17 and 34-36 depend from claim 8, Applicants respectfully maintain that claims 9-17 and 34-36 are likewise in condition for allowance.

35 USC § 103 Rejections

As to claim 2 and 9:

First, Applicants have argued *supra* in response to the Examiners § 102(b) rejection of claims 1 and 8 that claims 1 and 8 are allowable, since claim 2 depends from claim 1 and claim 9 depends from claim 8, Applicants respectfully maintain that claims 2 and 9 are not unpatentable over Bohr in view of Yu and are in condition for allowance.

Second, the Examiner has stated: “Yu [Figs. 6-7] discloses a method wherein further including: recessing [66,68] said dielectric layer in said spaces below said top surfaces of said wire bond pads [44,48a-b]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Yu into the method of Bohr wherein further including: recessing said dielectric layer in said spaces below said top surfaces of said wire bond pads. The ordinary artisan would have been motivated to modify Bohr in the manner set forth above for at least the purpose of providing low-k air gaps between the metal lines to reduce capacitance [Yu; para. 3 lines 19-23].”

Applicants contend that claims 2 and 9, as amended, are not obvious in view of Bohr in view of Yu because Bohr in view of Yu does not teach or suggest every feature of claims 2 and 9. For example, Bohr in view of Yu does not teach or suggest “an upper region of sidewalls of said bond pads exposed in said spaces and a lower region of said sidewalls of said bond pads covered by said dielectric layer.” Applicants respectfully point out that in Yu FIG. 6-7, dielectric layer 36 and 54 cover the entire sidewalls of structures 44, 48a and 48b and no region of the sidewalls are exposed.

Based on the preceding arguments, Applicants respectfully maintain that claims 2 and 9 are not unpatentable over Bohr in view of Yu and are in condition for allowance.

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CONCLUSION

Based on the preceding arguments, Applicants respectfully believe that all pending claims and the entire application meet the acceptance criteria for allowance and therefore request favorable action. If Examiner believes that anything further would be helpful to place the application in better condition for allowance, Applicants invite the Examiner to contact the Applicants' representative at the telephone number listed below. The Director is hereby authorized to charge and/or credit Deposit Account 09-0456.

Respectfully submitted,
FOR: Daubenspeck et al.

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